OFFICE OF RIVER PROTECTION
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

APR 1 3 2017

17-TF-0037

Ms. Alexandra K. Smith, Program Manager
Nuclear Waste Program
Washington State
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354

Ms. Smith:

THE U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION TRANSMITTAL OF RPP-RPT-59899, *TANK 241-AY-102 MONTHLY MONITORING REPORT JANUARY 2017,* REV. 00, IN RESPONSE TO SECTION II.B.13 OF THE 241-AY-102 SETTLEMENT AGREEMENT

Reference: Pollution Control Hearings Board, State of Washington, 241-AY-102 Settlement Agreement, PCHB No. 14-041c, signed and submitted September 29, 2014, effective October 2, 2014.

The 241-AY-102 Settlement Agreement (Reference) signed by the parties and submitted to the Pollution Control Hearings Board (Board), became effective upon issuance of the Board's Order dismissing the appeal. The Settlement Agreement requires a number of documents and actions regarding Tank 241-AY-102, including the following provision in Section II.B.13:

> Monthly: Provide written reports to Ecology on all Tank 241-AY-102 annulus inspection and monitoring results conducted according to the Monitoring Plan (provided under requirement B.7 above) and the SY Settlement Agreement. These documents shall include reporting on annulus ventilation performance and status, images of the annulus, CAM readings, ENRAF readings, CAM and ENRAF calibration results, sample analysis results, waste heat monitoring results, including any interpretations and conclusions based on the results.

The purpose of this letter is to transmit the Tank 241-AY-102 Monthly Monitoring Report for January 2017 to the Washington State Department of Ecology.

If you have any questions, please contact Glyn Trenchard, Acting Assistant Manager for Tank Farms, Office of River Protection, at (509) 373-4016, or Jessica Joyner, Environmental Protection, Washington River Protection Solutions LLC, at (509) 376-7533.

Mark A. Lindholm, President and Project Manager
Washington River Protection Solutions LLC

Kevin W. Smith, Manager
Office of River Protection

TF:RLE

Attachment

cc w/attach:
J.M. Alzheimer, Ecology
N.M. Menard, Ecology
R. Utley, WDOH
R.M. Allen, WRPS
R.D. Cantwell, WRPS
S.B. Cherry, WRPS
N.R. Davis, WRPS
R.E. Gregory, WRPS
R.D. Greenwell, WRPS
S.P. Guillot, WRPS
J.A. Joyner, WRPS
D.L. Klages, WRPS
M.A. Lindholm, WRPS
R.B. McPherson, WRPS
D.K. Smith, WRPS
D.W. Strasser, WRPS
M.F. Tavelli, WRPS
Administrative Record
Environmental Portal, LMSI
WRPS Correspondence Control

cc electronic w/attach:
C. Cress, AGO
K.T. Wood, AGO
D.B. Bartus, EPA
D.A. Faulk, EPA
S.S. Lowe, Ecology
J.J. Lyon, Ecology
J.W. Mathey, Ecology
N.M. Menard, Ecology
J.B. Price, Ecology
C.L. Whalen, Ecology
K.J. Wold, Ecology
K. Niles, ODOE

cc w/out attach:
R. Skeen, CTUIR
S. Hudson, HAB
G. Bohnee, NPT
R. Jim, YN

ATTACHMENT

17-TF-0037

TANK 241-AY-102 January 2017

MONTHLY MONITORING REPORT

DOCUMENT RELEASE AND CHANGE FORM

Prepared For the U.S. Department of Energy, Assistant Secretary for Environmental Management
By Washington River Protection Solutions, LLC., PO Box 850, Richland, WA 99352
Contractor For U.S. Department of Energy, Office of River Protection, under Contract DE-AC27-08RV14800

Release Stamp

DATE: Apr 11, 2017 HANFORD RELEASE

1. **Doc No:** RPP-RPT-59899 **Rev.** 00

2. **Title:**
Tank 241-AY-102 Monthly Monitoring Report January 2017

3. **Project Number:** ☐ N/A
T1P97

4. **Design Verification Required:**
☐ Yes ☒ No

5. **USQ Number:** ☒ N/A
RPP-27195

6. **PrHA Number** **Rev.** ☒ N/A

Clearance Review Restriction Type:
public

7. **Approvals**

Title	Name	Signature	Date
Clearance Review	PERRY, LANA R	*PERRY, LANA R*	04/11/2017
Document Control Approval	WASHINGTON, MARGUERITE	*WASHINGTON, MARGUERITE*	04/11/2017
Originator	KLAGES, DEANNA L	*KLAGES, DEANNA L*	04/10/2017
Responsible Manager	JOYNER, JESSICA A	*JOYNER, JESSICA A*	04/10/2017

8. **Description of Change and Justification**

Initial Release

9. **TBDs or Holds** ☒ N/A

10. **Related Structures, Systems, and Components**

a. **Related Building/Facilities** ☐ N/A	b. **Related Systems** ☐ N/A	c. **Related Equipment ID Nos. (EIN)** ☐ N/A
241-AY	241-TMAC	AY102-WSTA-CAM-102
241-AY-102	241-VT	AY102-WSTA-LDT-151
241-AY-102A	241-VTA	AY102-WSTA-LDT-152
	241-VTP	AY102-WSTA-LDT-153
	241-WST	AY102-WST-LIT-101
	241-WSTA	

11. **Impacted Documents – Engineering** ☒ N/A

Document Number	Rev.	Title

12. **Impacted Documents (Outside SPF):**

N/A

13. **Related Documents** ☐ N/A

Document Number	Rev.	Title
RPP-PLAN-60074	05	TANK 241-AY-102 Monitoring Plan
RPP-PLAN-60610	02	Tank 241-AY-102 Contingency Plan - Operations Phase
RPP-RPT-59836	00	Tank 241-AY-102 Monthly Monitoring Report November 2016

14. **Distribution**

Name	Organization
BAIDE, DAN	TFP ENGINEERING
CATO, DIANE M	BASE OPERATIONS ENGINEERING
CHERRY, STEVE	GENERAL COUNSEL
FOLLETT, JORDAN R	RETRIEVAL PROCESS ENGINEERING
GREENWELL, DOUG	PROJECT OPERATIONS
GREGORY, ROB	TANK FARM PROJECTS
GUILLOT, SEBASTIEN	
HANSON, CARL E	AY-102 RETRIEVAL ENGRNG
JOYNER, JESSICA A	ENVIRONMENTAL PROTECTION
KLAGES, DEANNA L	ENVIRONMENTAL PROTECTION
LINDHOLM, MARK A	
MENDOZA, RUBEN E	WASTE STORAGE/TRANSFER ENG
MEYERS, GEORGE H	
MORGAN, NATHAN J	FUNCTIONAL ORGS PROJ CNTRLS
SMITH, DONALD (KENT)	PRODUCTION OPERATIONS
STRASSER, DAVID W	A/AX/AY/AZ FARM TEAM
TAVELLI, MARK F	ENGINEERING
TEMPLETON, ANDREW M	TNK WST INVENTORY & CHARACTZTN
VOOGD, JEFFRY A	BASE OPS ENV COMPLIANCE

INFORMATION CLEARANCE REVIEW AND RELEASE APPROVAL

Part I: Background Information

Title: Tank 241-AY-102 Monthly Monitoring Report January 2017

Information Category:
☐ Abstract ☐ Journal Article ☐ Summary
☐ Internet ☐ Visual Aid ☐ Software
☐ Full Paper ☑ Report ☐ Other _____

Publish to OSTI? ☐ Yes ☑ No

Trademark/Copyright "Right to Use" Information or Permission Documentation	Yes ☐	NA ☑

Document Number: RPP-RPT-59899 Revision 00 Date: March 2017

Author: Klages, Deanna L

Part II: External/Public Presentation Information

Conference Name:

Sponsoring Organization(s): Environmental Protection

Date of Conference: Conference Location:

Will Material be Handed Out? ☐ Yes ☑ No Will Information be Published? ☐ Yes ☑ No *(If Yes, attach copy of Conference format instructions/guidance.)*

Part III: WRPS Document Originator Checklist

Description	*Yes*	*N/A*	*Print/Sign/Date*
Information Product meets requirements in TFC-BSM-AD-C-01?	☐	☑	
Document Release Criteria in TFC-ENG-DESIGN-C-25 completed? (Attach checklist)	☐	☑	
If product contains pictures, safety review completed?	☐	☑	

Part IV: WRPS Internal Review

Function	*Organization*	*Date*	*Print Name/Signature/Date*
Subject Matter Expert	WRPS	03/30/2017	Klages, Deanna L IDMS Data File att.
Responsible Manager	WRPS	03/23/2017	Joyner, Jessica A IDMS Data File att.
Other:			

Part V: IRM Clearance Services Review

Description	*Yes*	*No*	*Print Name/Signature*
Document Contains Classified Information?	☐	☒	If Answer is "Yes," ADC Approval Required Print Name/Signature/Date
Document Contains Information Restricted by DOE Operational Security Guidelines?	☐	☒	Reviewer Signature: Print Name/Signature/Date
Document is Subject to Release Restrictions? *If the answer is "Yes," please mark category at right and describe limitation or responsible organization below:*	☐	☒	Document contains: ☐ Applied Technology ☐ Protected CRADA ☐ Personal/Private ☐ Export Controlled ☐ Proprietary ☐ Procurement – Sensitive ☐ Patentable Info. ☐ OUO ☐ Predecisional Info. ☐ UCNI ☐ Restricted by Operational Security Guidelines ☐ Other (Specify) _____
Additional Comments from Information Clearance Specialist Review?	☐	☒	Information Clearance Specialist Approval APPROVED By Lana Perry at 2:38 pm, Mar 30, 2017 Print Name/Signature/Date

When IRM Clearance Review is Complete – Return to WRPS Originator for Final Signature Routing (Part VI)

INFORMATION CLEARANCE REVIEW AND RELEASE APPROVAL

Part VI: Final Review and Approvals

Description	Approved for Release		Print Name/Signature	
	Yes	N/A		
WRPS External Affairs	☒	☐	Holloway, Jerry N	IDMS Data File att.
WRPS Office of Chief Counsel	☒	☐	Cherry, Steve	IDMS Data File att.
DOE – ORP Public Affairs/Communications	☒	☐	Marshall, Richard	IDMS Data File att.
Other: ORP	☒	☐	Eakins, Reggie L	IDMS Data File att.
Other: DOE	☒	☐	Silberstein, Mark D	IDMS Data File att.

Comments Required for WRPS-Indicate Purpose of Document:

January 2017 Monthly Monitoring Report submittal for Tank 241-AY-102 Settlement Agreement Section II.B.13 (PCHB No. 14-041c)

Approved for Public Release; Further Dissemination Unlimited

APPROVED
By Lana Perry at 2:44 pm, Mar 30, 2017

Information Release Station

Was/Is Information Product Approved for Release? ☒ Yes ☐ No

If Yes, what is the Level of Releaser? ☑ Public/Unrestricted ☐ Other (Specify) _____

Date Information Product Stamped/Marked for Release: 03/30/2017

Was/Is Information Product Transferred to OSTI? ☐ Yes ☒ No

Forward Copies of Completed Form to WRPS Originator

```
- <workflow name="Expedite - RPP-RPT-59899 R0_241AY102 Mnthly Jan 17"
    id="212584125">
  - <task name="Clearance Process" id="0" date-initiated="20170322T1238"
      performer="Lana R Perry" performer-id="86772" username="h0028549">
      <comments>**EXPEDITE** Due Monday March 27, 2017 Noon. Please
        approve "Tank 241-AY-102 Monthly Monitoring Report January 2017,"
        submitted by Deanna Klages for Public release. Thank you, Lana Perry
        Information Clearance</comments>
    </task>
    <task name="Add XML" id="1" date-done="20170322T1238" />
    <task name="Expedite - Manager Approval" id="6" date-due="20170324T1238"
      date-done="20170323T0741" performer="Jessica A Joyner" performer-
      id="149552018" username="h1801793" disposition="Approve"
      authentication="true" />
    <task name="Expedite - Document Reviewer1" id="16" date-
      due="20170327T0741" date-done="20170327T0649" performer="Jerry N
      Holloway" performer-id="140435533" username="h0087835" disposition="Public
      Release" authentication="true" />
    <task name="Expedite - Document Reviewer2" id="17" date-
      due="20170327T0741" date-done="20170328T1015" performer="Stephen B
      Cherry" performer-id="1382719" username="h0374767" disposition="Public
      Release" authentication="true" />
    <task name="Doc Owner Clearance Review" id="13" date-due="20170329T1015"
      date-done="20170328T1018" performer="Deanna L Klages" performer-
      id="5225435" username="h0088972" disposition="Send On"
      authentication="true" />
    <task name="Milestone 1" id="24" date-done="20170328T1019" />
  - <task name="ORP Document Reviewer1" id="57" date-due="20170330T1018"
      date-done="20170330T1333" performer="Richard A Marshall" performer-
      id="203862915" username="h4535783" disposition="Public Release"
      authentication="true">
      <reviewer performer="Reggie Jr L Eakins" performer-id="185793045"
        username="h8850669" />
      <reviewer performer="Mark D Silberstein" performer-id="158207236"
        username="h5490246" />
      <comments>Reviewer's Comments Date: 03/30/2017 01:14 PM Step Name:
        RPP-RPT-59899 Tank 241-AY-102 Monthly Monitoring Report January
        2017 Performer: Silberstein, Mark (h5490246) approve</comments>
    </task>
    <task name="Doc Owner Reviews ORP Comments" id="61" date-
      due="20170331T1333" date-done="20170330T1425" performer="Deanna L
      Klages" performer-id="5225435" username="h0088972" disposition="Send On"
      authentication="true" />
    <task name="Milestone 2" id="62" date-done="20170330T1425" />
    <task name="Verify Doc Consistency" id="4" date-due="20170331T1425" date-
      done="20170330T1426" performer="Lana R Perry" performer-id="86772"
      username="h0028549" disposition="Cleared" authentication="true" />
  </workflow>
```

Tank 241-AY-102 Monthly Monitoring Report January 2017

Deanna L. Klages

Richland, WA 99352
U.S. Department of Energy Contract DE-AC27-08RV14800

EDT/ECN: N/A UC: N/A
Cost Center: N/A Charge Code: N/A
B&R Code: N/A Total Pages: ~~16~~ 20 mw 4/11/2017

Key Words: Tank, monthly monitoring report, AY-102, Settlement Agreement PCHB No. 14-041c

Abstract: January 2017 Monthly Monitoring Report submittal for Tank 241-AY-102 Settlement Agreement Section II.B.13 (PCHB No. 14-041c)

EXECUTIVE SUMMARY

Monthly monitoring reports are generated for Tank 241-AY-102 pursuant to Section II.B.13 of the Settlement Agreement in *Washington River Protection Solutions and U.S. Department of Energy, Office of River Protection v. State of Washington, Department of Ecology* PCHB No. 14-041c, effective on October 2, 2014.

Tank 241-AY-102 tank waste retrieval was shut down on April 30, 2016, so that an additional retrieval technology could be installed. AY-102 retrieval using extended reach sluicers continued during the month of January 2017.

Environmental Notifications that related to Tank 241-AY-102 operations during the month of January 2017 are detailed in Section 6.0.

TABLE OF CONTENTS

1.0 INTRODUCTION 1
1.1 PURPOSE 1
1.2 SUMMARY 1
2.0 ANNULUS VISUAL AND VIDEO INSPECTIONS 1
3.0 MONITORING 8
4.0 ESTIMATE OF ANNULUS MATERIAL VOLUME 9
5.0 LEAK DETECTION PIT PH AND LIQUID LEVEL RESULTS 11
6.0 TANK PUMPING OPERATIONS 11
7.0 REFERENCES 12

LIST OF FIGURES

Figure 1. AY-102 Dome Penetration Diagram Showing Inspection Locations 3
Figure 2. Waste Accumulation Monitoring through Risers 80 and 87 4
Figure 3. General Condition of the Annulus Floor on 1/30/2017 from Riser 77 Looking Left (A) and Looking Right (B) 5
Figure 4. General Condition of the Annulus Floor on 2/7/2017 from Riser 79 Looking Left (A) and Looking Right (B) 5
Figure 5. General Condition of the Annulus Floor on 1/21/2017 from Riser 80 Looking Left (A) and Looking Right (B) 5
Figure 6. General Condition of the Annulus Floor on 1/30/2017 from Riser 82 Looking Left (A) and Looking Right (B) 6
Figure 7. General Condition of the Annulus Floor on 1/30/2017 from Riser 83 Looking Left (A) and Looking Right (B) 6
Figure 8. General Condition of the Annulus Floor on 2/6/2017 from Riser 88 Looking Left (A) and Looking Right (B) 6
Figure 9. General Condition of the Annulus Floor on 2/6/2017 from Riser 89 Looking Left (A) and Looking Right (B) 7
Figure 10. Total Annulus Material Volume 10
Figure 11. AY-102 Annulus Enraf Liquid Level Readings January 2017 10

LIST OF TABLES

Table 1. Visual Inspection Evaluation of Conditions Indicating a Potential Worsening Leak Rate from the Primary Tank 2
Table 2. Summary of January 2017 Monitoring and Calibration for AY-102 8
Table 3. AY-102 Annulus Enraf Measurements and Estimated Material Volume 9
Table 4. Leak Detection Pit pH and Liquid Level Readings for January 2017 11
Table 5. Tank Pumping Operations Environmental Notifications 11

ABBREVIATIONS AND ACRONYMS

AY-102	Tank 241-AY-102
CAM	continuous air monitor
Enraf	Enraf-Nonius Series 854
Ecology	Washington State Department of Ecology
Settlement Agreement	*Settlement Agreement and Stipulated Order of Dismissal*
TOC	Tank Operations Contractor

1.0 INTRODUCTION

1.1 PURPOSE

The January 2017 monthly monitoring report for Tank 241-AY-102 (AY-102) is submitted pursuant to Section II.B.13 of the Settlement Agreement in *Washington River Protection Solutions and U.S. Department of Energy, Office of River Protection v. State of Washington, Department of Ecology* (Ecology) PCHB No. 14-041c, effective on October 2, 2014. This provision states as follows:

> *Monthly: Provide written reports to Ecology on all Tank 241-AY-102 annulus inspection and monitoring results conducted according to the Monitoring Plan (provided under requirement B.7 above) and the SY Settlement Agreement. These documents shall include reporting on annulus ventilation performance and status, images of the annulus, CAM readings, ENRAF readings, CAM and ENRAF calibration results, sample analysis results, waste heat monitoring results, including any interpretations and conclusions based on the results.*

The January 2017 monthly monitoring report contained herein, applies only to AY-102. This report for January 2017 covers the time period from January 1 through 31, 2017.

1.2 SUMMARY

As described in RPP-PLAN-60074, "Tank 241-AY-102 Monitoring Plan," this document provides the results of visual and video annulus inspections, primary and annulus ventilation performance and status, continuous air monitor (CAM) readings, Enraf[1] readings, CAM and Enraf calibration results, leak detection pit pH and liquid level results, waste temperature monitoring results, and including any interpretations and conclusions based on the results. Monitoring activities during tank pumping operations, as detailed in RPP-PLAN-60074, are also provided in this document. A summary of the visual and video annulus inspections is in Section 2.0, monitoring readings, calibration, and ventilation performance are in Section 3.0, estimate of annulus material volume is in Section 4.0, leak detection pit monitoring is in Section 5.0, and tank pumping operations equipment status is in Section 6.0.

2.0 ANNULUS VISUAL AND VIDEO INSPECTIONS

Visual and video inspections of the AY-102 annulus for the January 2017 reporting period are summarized below.

Sections II.B.12.a and b of the Settlement Agreement state:

a. *Every two months: Conduct video inspections of the entire annulus or at least 95 percent of the annulus space.*

[1]Enraf 854 XTG is a registered trademark of Enraf B.V., Delft, Netherlands.

b. *Every two weeks: Conduct video inspections of all currently known waste accumulations in the Tank AY-102 annulus and, as they are discovered, all newly discovered waste accumulations.*

The January 2017 monthly monitoring report includes the results for the video inspections performed every two weeks during January 2017 and the results for the video inspections performed every two months for the December 2016 – January 2017 inspection period. NOTE: Due to weather conditions, the video inspections were extended into the beginning of February 2017 and are included in this report.

On June 16, 2016, letter 16-NWP-123, "Department of Ecology Response to Letter 16-TF-0064, Proposed Update to *Tank 241-AY-102 Monitoring Plan*, Rev. 4, RPP-PLAN-60074," (A.K. Smith, 2016), approved changes to the every two weeks video inspection sites. Operations have transitioned to monitoring only Riser 87 every two weeks (Figure 1), however, due to weather conditions, the retrieval camera mounted in Riser 80 was used for the first bi-weekly inspection (Figure 2). Riser 77 and Riser 83 are now being monitored every two months.

Figure 1 provides riser locations and inspection frequencies. Dates of inspection are provided in Table 1. Pictures of the video inspections performed in December 2016 – January/early February 2017 are provided in Figures 2 through 9.

As stated in RPP-PLAN-60610, "Tank 241-AY-102 Contingency Plan – Operations Phase," three conditions indicating a potential worsening leak rate from the primary tank will be observable through video inspections. The three conditions are evaluated during each video inspection and results are provided in Table 1.

Table 1. Visual Inspection Evaluation of Conditions Indicating a Potential Worsening Leak Rate from the Primary Tank

Condition	Inspection #1 (Through Riser 80) January 21, 2017	Inspection #2 January 30, 2017
Video Evidence of a Change in Condition within the Viewable Ventilation Channels	Ventilation channels were not visible during the video inspection.	Yes, a residual sludge layer can be seen on most of the viewable ventilation channels as a result of waste leakage during retrieval operations.
Video Evidence of Significant Waste Accumulation Rate Increase[1]	Yes, the average annulus Enraf measurement was 10.90 inches. There is evidence of a waste accumulation rate increase in the annulus, which was expected as a result of ongoing retrieval operations.	Yes, the average annulus Enraf measurement was 5.13 inches. There is evidence of a waste accumulation rate increase in the annulus, which was expected as a result of ongoing retrieval operations.
Video Evidence of "Active Flow"	Ventilation channels were not visible during the video inspection.	Yes, the viewable ventilation channels observed through Riser 87 have shown evidence of past active flow. No other locations observed to date.

[1] A significant leak rate increase would constitute an order of magnitude volume change between inspection reports, based on video surveillance.

Figure 1. AY-102 Dome Penetration Diagram Showing Inspection Locations

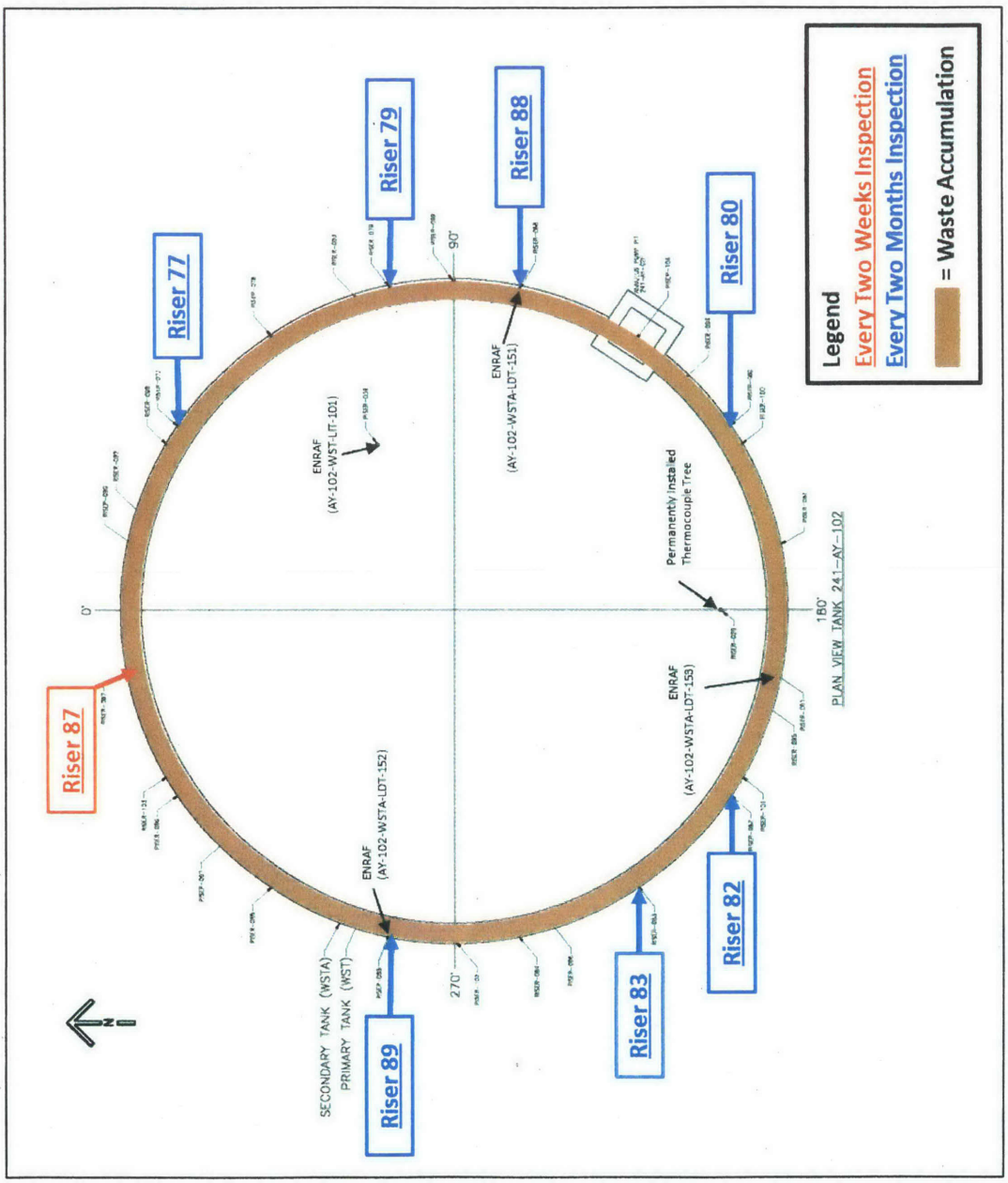


Figure 2. Waste Accumulation Monitoring through Risers 80 and 87 (Comparison between 1/21/2017 and 1/30/2017)

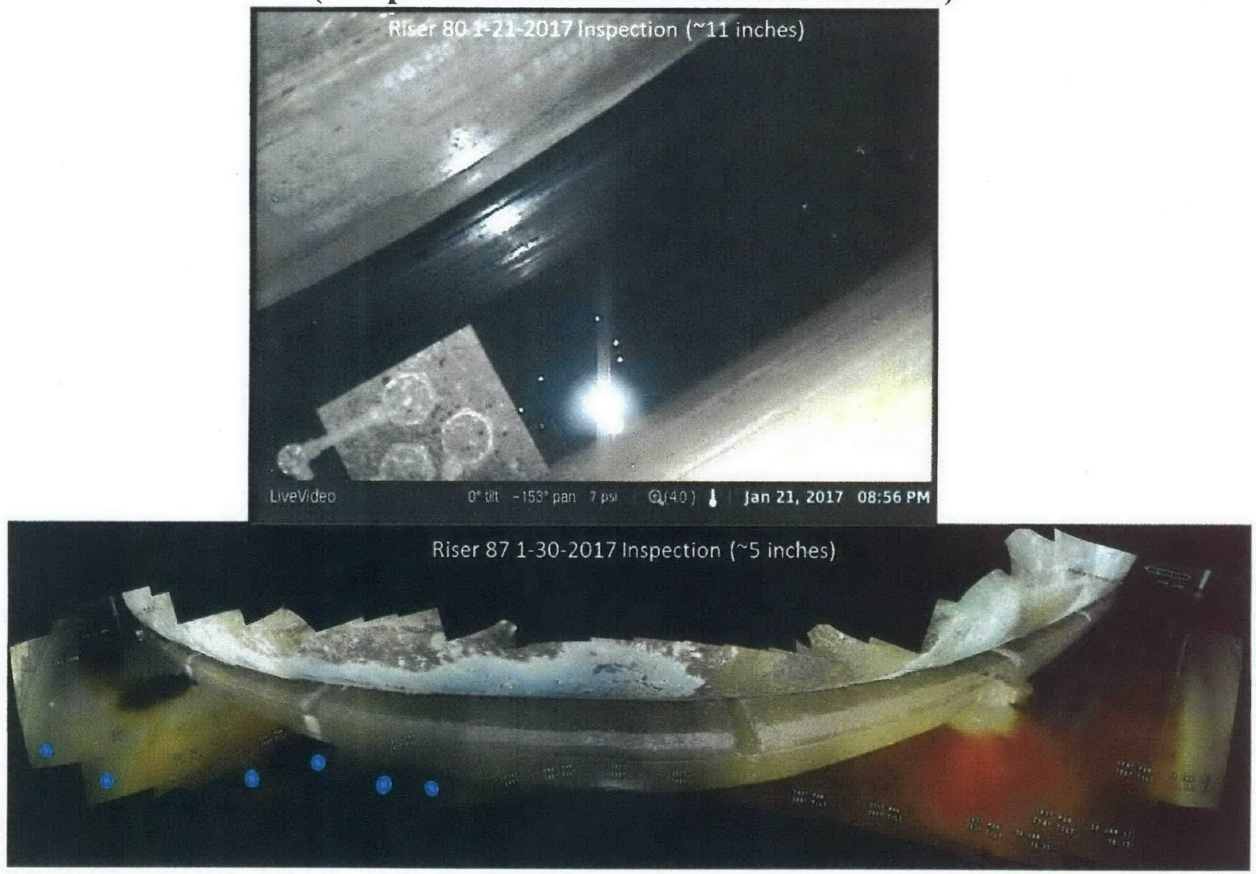


Figure 3. General Condition of the Annulus Floor on 1/30/2017 from Riser 77 Looking Left (A) and Looking Right (B)

Figure 4. General Condition of the Annulus Floor on 2/7/2017 from Riser 79 Looking Left (A) and Looking Right (B)

Figure 5. General Condition of the Annulus Floor on 1/21/2017 from Riser 80 Looking Left (A) and Looking Right (B)

Figure 6. General Condition of the Annulus Floor on 1/30/2017 from Riser 82 Looking Left (A) and Looking Right (B)

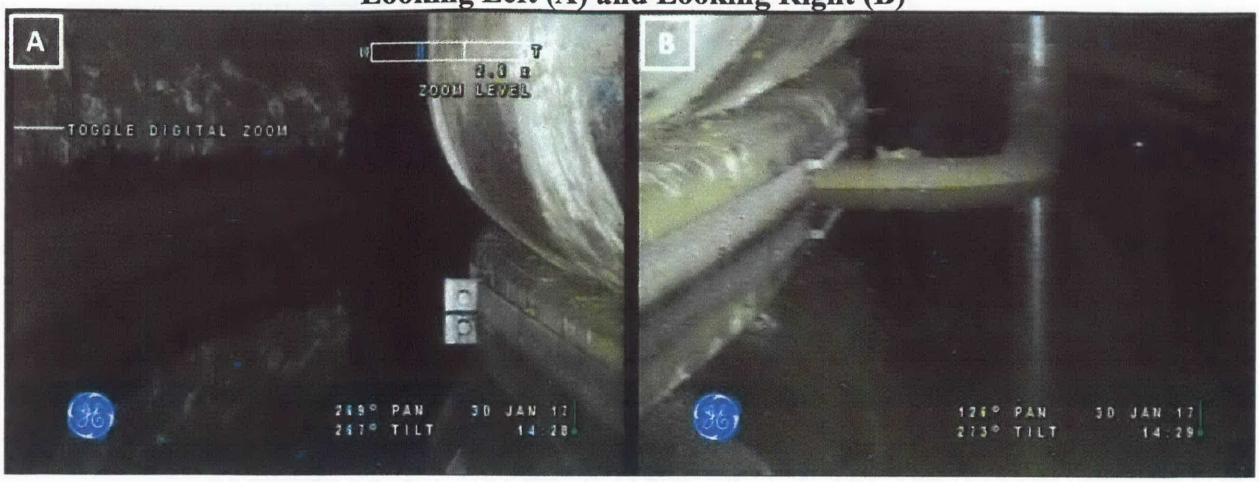


Figure 7. General Condition of the Annulus Floor on 1/30/2017 from Riser 83 Looking Left (A) and Looking Right (B)

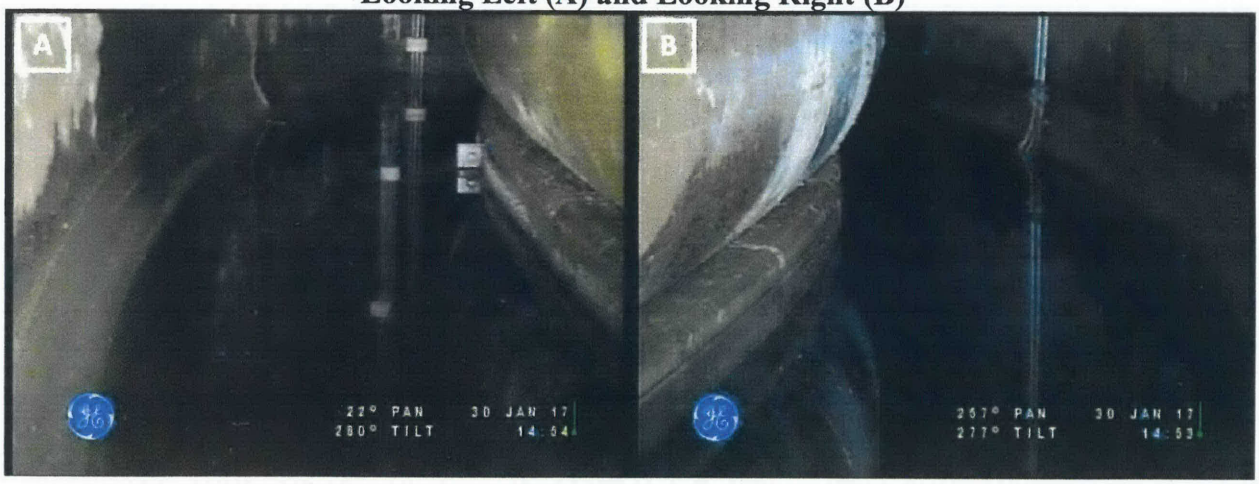
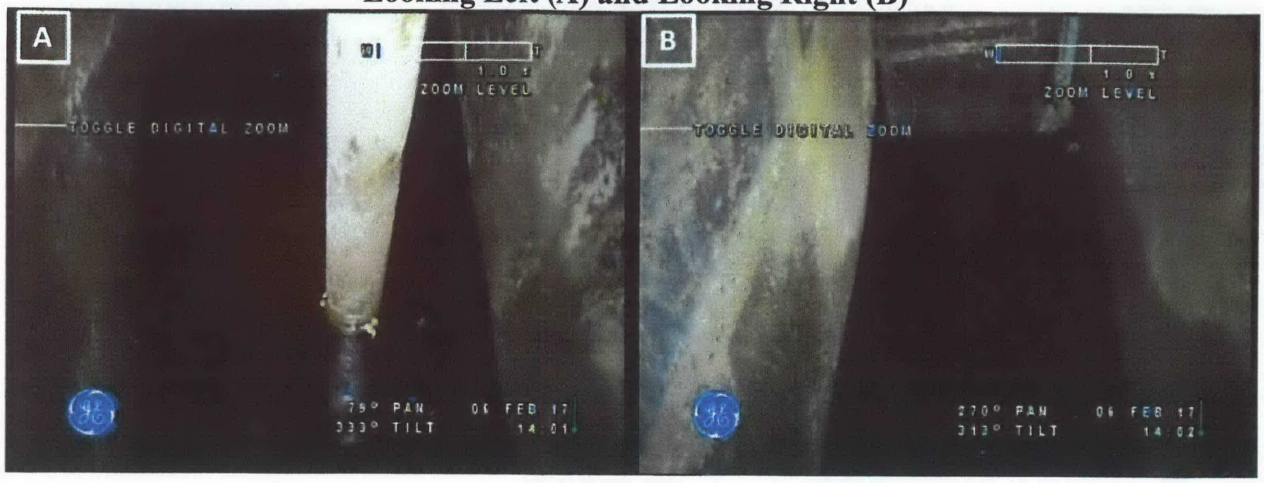


Figure 8. General Condition of the Annulus Floor on 2/6/2017 from Riser 88 Looking Left (A) and Looking Right (B)

Figure 9. General Condition of the Annulus Floor on 2/6/2017 from Riser 89 Looking Left (A) and Looking Right (B)



3.0 MONITORING

Table 2 provides AY-102 annulus and primary ventilation performance and status, CAM readings, Enraf readings, CAM and Enraf calibration results, waste heat monitoring results, and interpretations and conclusions based on the monitoring results for January 2017.

Table 2. Summary of January 2017 Monitoring and Calibration for AY-102

Description	Data Source	Instrument(s)	Calibration Results	In Service Dates[2]	Interpretations and Conclusions
Primary Tank Surface Level	TMACS	Enraf (Riser 39) AY102-WST-LIT-101	Last: 11/30/16 Next: 10/26/17 Note 1.	Not in service	The Enraf was temporarily lowered to record two individual measurements on 1/30/17 and 1/31/17 to support ongoing retrieval operations.
Annulus Surface Level	TMACS	Enraf (Riser 88) AY102-WSTA-LDT-151	Last: 4/12/16 Next: 3/8/17	1/1-31/17	Level Readings for January ranged between 5.23" and 11.00". The annulus level was 5.31" on 1/31/17.
		Enraf (Riser 89) AY102-WSTA-LDT-152	Last: 7/7/16 Next: 6/7/17	1/1-31/17	Level Readings for January ranged between 5.00" and 12.49". The annulus level was 5.08" on 1/31/17.
		Enraf (Riser 91) AY102-WSTA-LDT-153	Last: 6/30/16 Next: 5/26/17	1/1-31/17	Level Readings for January ranged between 5.18" and 10.91". The annulus level was 5.26" on 1/31/17.
Primary Tank Waste Temperatures Note 3.	MCS	Thermocouples at 4" height TE-047 (ALC) TE-074—R 70 TC1 TE-073—R 72 TC1 TE-071—R 40 TC1 TE-062—R 41 TC1 TE-065—R 42 TC1 TE-068—R 43 TC1	Supplemental manual readings taken by calibrated M&TE	1/1-31/17	Average Solid/Sludge Temperature change for January 2017 was -2.28°F (from 79.0 to 76.72°F). The temperatures do not exceed the DST waste temperatures as documented in HNF-IP-1266.
Annulus Leak Detection (CAM)	SACS	Continuous Air Monitor (CAM) AY102-WSTA-CAM-102	Last: 9/3/15 Next: On demand Note 1.	Not in service.	No readings. CAM was not operated during the month of January. The annulus exhaust is now routed through the AY/AZ primary exhauster. Annulus air no longer is routed past the annulus cam air inlet.

Description	Percent Operated[2]	Interpretations and Conclusions
Primary Tank Ventilation	100%	Dates of Operation: 1/1-31/17
Annulus Tank Ventilation	0%	Dates of Operation: Not in service. Note 4.

[1]Routine calibration will be suspended when equipment is taken out of service during tank pumping operations.
[2]Equipment is inspected daily in order to maintain operability, including days when equipment is not in service.
[3]Temperature monitoring is a Technical Safety Requirement Administrative Control Key Element to ensure that waste temperatures do not increase to temperatures greater than that assumed in the Tank Farms DST Time to Lower Flammability Limit analysis.
[4]The annulus exhaust is now routed through the AY/AZ primary exhauster.

4.0 ESTIMATE OF ANNULUS MATERIAL VOLUME

The previous monthly reporting period, December 1 through 31, 2016, estimated approximately 3935 gallons of waste in the annulus at the end of the month. The total estimated material volume in the annulus at the end of the current monthly reporting period, January 1 through 31, 2017, is approximately 1916 gallons as defined in Table 3. Figure 10 shows the total estimated annulus material volume over the last twelve reporting months.

During January 2017, retrieval operations in the primary tank caused additional waste to leak from the primary tank to the annulus. The variation in estimated waste volume was anticipated as a result of ongoing retrieval operations and the annulus pump was operated periodically during the month of January to return accumulated liquid to the primary tank.

Annulus level behavior for the month of January 2017 is provided in Figure 11.

Table 3. AY-102 Annulus Enraf Measurements and Estimated Material Volume

Annulus ENRAF Measurements[a]	Inspection #1	Inspection #2	Inspection #3	1/31/2017
	1/1/2017	1/21/2017	1/30/2017	
Riser 88 (Inches)	10.51	11.00	5.22	5.31
Riser 89 (Inches)	10.27	10.76	5.00	5.08
Riser 91 (Inches)	10.48	10.95	5.18	5.26
Average Measurement (Inches)	10.42	10.90	5.13	5.22
Estimated Annulus Volume (Gallons)	3935	4164	1883	1916

[a]Annulus Enraf Measurements are obtained from the Surveillance Data Display System.

Figure 10. Total Annulus Material Volume

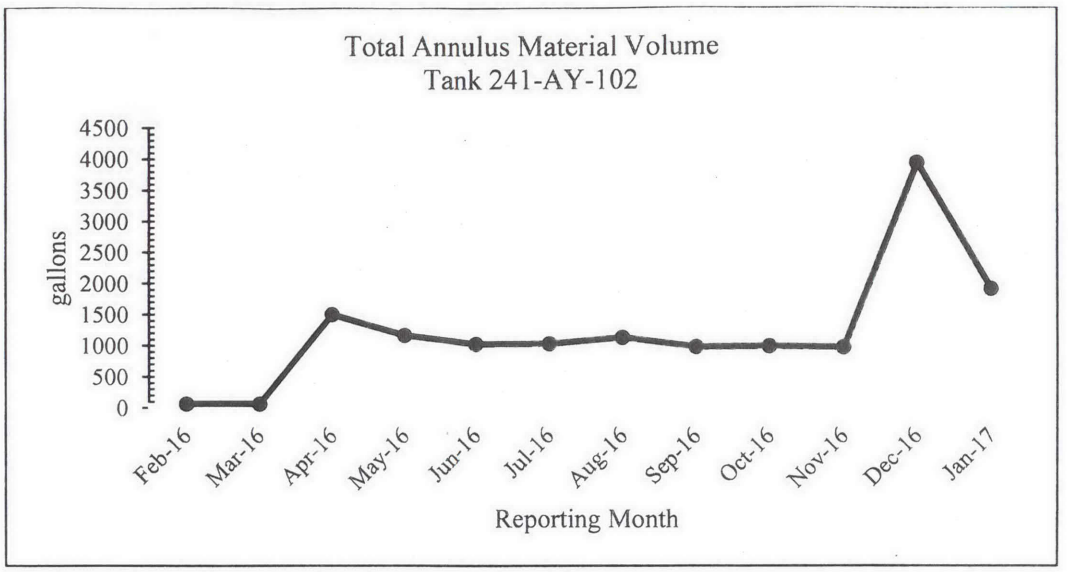
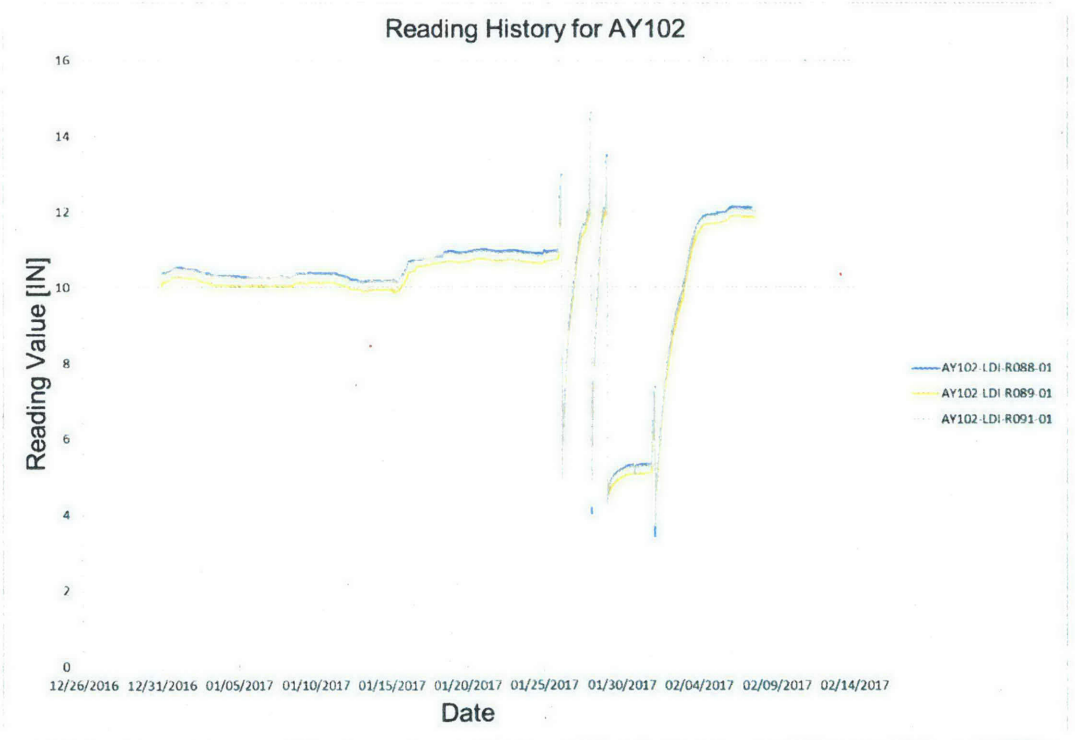


Figure 11. AY-102 Annulus Enraf Liquid Level Readings January 2017



5.0 LEAK DETECTION PIT PH AND LIQUID LEVEL RESULTS

The AY-102 leak detection pit pH is taken at least monthly and the AY-102 leak detection pit liquid level is taken at least weekly. Results of the first and last readings of the month are given in Table 4.

Table 4. Leak Detection Pit pH and Liquid Level Readings for January 2017

Monitoring	Date	Reading	Interpretations and Conclusions
pH	1-31-2017	5.0	pH is within acceptable range.
Liquid Level	1-5-2017	3.32 in.	Liquid level is within acceptable range. Leak detection pit level readings are obtained daily through electronic monitoring.
	1-30-2017	2.69 in.	

6.0 TANK PUMPING OPERATIONS

Table 5 provides the environmental notifications announcing the changes in equipment status during the January 2017 tank pumping operations. In service dates for all monitoring equipment is provided in Table 2.

Table 5. Tank Pumping Operations Environmental Notifications

Environmental Notification	Date	Equipment Status
TOC-ENV-NOT-2016-4327	1/1/2017	At 1615 hours on 12/31/2016, AY-102 Retrieval was stopped due to a high ammonia reading (200 ppm) at the AP Exhauster (296-A-48, A Train). Prior ammonia reading (12/31/2016 at 0130 hours was 3 ppm and the reading taken afterward on 1/1/2017 at 0000 hours was 170 ppm). It was determined that the cumulative emissions did not exceed the 24-hour time-weighted-average for ammonia. Originally, AY-102 Retrieval was scheduled to restart on 1/1/2017, however, inclement weather created safety issues and retrieval was on hold until later in the week (1/6/2017).

Environmental Notification	Date	Equipment Status
TOC-ENV-NOT-2017-4343	2/1/2017	The December/January bimonthly video inspection of the entire annulus or at least 95 percent of the annulus space, was not completed by the scheduled due date of 1/31/2017. Five of the eight required video inspections were completed on time. However, three inspections were delayed due to multiple site closures and adverse weather which created unsafe work conditions. The remaining three inspections will be completed at the earliest opportunity, not to exceed two weeks. NOTE: These inspections were completed by 2/7/2017.

7.0 REFERENCES

HNF-IP-1266, "Tank Farm Operations Administrative Controls," as amended, Washington River Protection Solutions, LLC, Richland, Washington.

RPP-13033, 2016, "Tank Farm Documented Safety Analysis," Rev. 01, U.S. Department of Energy, Office of River Protection, Washington River Protection Solutions, Richland, Washington.

RPP-PLAN-60610, 2016, "Tank 241-AY-102 Contingency Plan – Operations Phase," Rev. 02, U.S. Department of Energy, Office of River Protection, Washington River Protection Solutions, Richland, Washington.

RPP-PLAN-60074, 2016, "Tank 241-AY-102 Monitoring Plan," Rev. 05, U.S. Department of Energy, Office of River Protection, Washington River Protection Solutions, Richland, Washington.

Smith, A.K., 2016, "Department of Ecology Response to Letter 16-TF-0064, Proposed Update to *Tank 241-AY-102 Monitoring Plan*, Rev. 4, RPP-PLAN-60074," (letter 16-NWP-123 to Lindholm, M.A. and K.W. Smith, U.S. Department of Energy, Office of River Protection, and Washington River Protection Solutions, LLC, June 16, 2016), State of Washington, Department of Ecology, Richland, Washington.